

What is claimed is:

1. A device for monitoring a cable, comprising:
an imaging device having a field of view;
5 a target, distinguishable within said field of view of said imaging device, associated with a cable; and
a computer processor connected to said imaging device for analyzing images of said target produced by said imaging device to determine a position of said cable.
- 10 2. The device of claim 1, where said imaging device comprises a charge coupled device camera.
3. The device of claim 1, where said imaging device comprises a still camera.
- 15 4. The device of claim 1, wherein said target comprises a reflective surface.
5. The device of claim 4, wherein said reflective surface comprises retro-reflective tape.
- 20 6. The device of claim 1, wherein said target comprises a portion of said cable.
7. The device of claim 1, wherein said target is self-illuminating.
8. The device of claim 1, wherein said computer processor comprises a frame
25 grabber.
9. The device of claim 1, wherein said computer processor is electrically connected to said imaging device.
- 30 10. The device of claim 1, wherein said computer processor is optically connected to said imaging device.
11. The device of claim 1, further comprising an illuminator mounted in proximity to said imaging device.

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a communications transmitter electrically connected to said data storage device for transmitting said position and said time value to a remote location.

20. A method for monitoring a cable, comprising:
calibrating a first image of a predetermined field of view showing a portion of a
cable to be monitored;

capturing a second image of said predetermined field of view;
5 correlating said first image with said second image to determine a position of said
portion of said cable within said second image; and
reporting said position.

21. The method of claim 20, wherein said calibrating step produces a vertical
10 offset value, wherein said position comprises a cable sag, and wherein said correlating step
comprises comparing said first image with said second image to determine a location of said
portion of said cable within said second image and calculating said cable sag based upon
said location of said portion of said cable within said second image and said vertical offset
value.

15 22. The method of claim 21, wherein said calibrating step comprises the steps of:
selecting said predetermined field of view comprising a target associated with said
portion of said cable and a calibration device;
capturing said first video image of said predetermined field of view;
20 determining a conversion factor for a number of pixels per an actual unit of distance
in said first video image;
determining a y-pixel coordinate for said target within said first video image;
measuring an actual ground clearance value between said target in said first video
image and a ground position;
25 calculating said vertical offset value based on said conversion factor, said y-pixel
coordinate and said actual ground clearance value.

23. The method of claim 20, wherein said predetermined field of view comprises
a target associated with said portion of said cable.

30 24. The method of claim 23, further comprising the step of illuminating said
target prior to said capturing step.

25. The method of claim 20, wherein said correlating step comprises:

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defining a predetermined portion of said first image containing a target associated with said portion of said cable;

assigning a first set of intensity values to each pixel in said predetermined portion depending upon its shade;

5 determining x-y pixel coordinates of said target within said first image;

assigning a second set of intensity values to each pixel in said second image depending upon its shade;

comparing said first set of intensity values to said second set of intensity values to identify a position of said predetermined portion within said second image; and

10 determining x-y pixel coordinates for said target within said second image, thereby determining said location of said portion of said cable within said second image.

26. The method of claim 25, further comprising calculating a correlation coefficient based upon said comparing step.

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27. The method of claim 20, wherein said reporting step comprises: storing said position and an associated time value; and transmitting said position.

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28. The method of claim 27, wherein said transmitting step comprises transmitting said position by radio waves.

29. The method of claim 27, wherein said transmitting step comprises transmitting said position by a cellular phone.

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30. The method of claim 20, wherein said calibrating step further comprises producing a horizontal offset value, wherein said position comprises a horizontal position, and wherein said calculating step comprises comparing said first image with said second image to determine a location of said portion of said cable within said second image and calculating a horizontal position based upon said location of said portion of said cable within said second image and said horizontal offset value.

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